ONE OF THE MOST EFFECTIVE METHODS OF STUDENT`S WORD STOCK ENRICHMENT

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The research paper is determinated and motivated by necessity of people's communication with different "motherly" languages. It makes new demands for the foreign language teaching methodology. A number of different problems arises. One of them is the student`s word stock enrichment.

We consider acoustic-graphic code (AGC) – word – as a single distinct conceptual unit of communication.

Potentially the majority of AGCs are ambiguous as the result of brain physiology, penetration of one language to other etc.

Jacob Bronovski, Roman Jakobson, Karl Pribram's researches in the theory of "languages of brain" gave big help in understanding of ambiguity in general and polysemy particularly.

Polysemy is objective display of person's brain function and exists in all languages.

Modern biophysical researches proved that process of recognition of polysemantic signs is more rapid process than recognition of unpolysemantic signs. It corresponds to the physical laws about minimization of energy.

It`s "profitable" to make a biochemical new context "decoration" of a concept than to create a new molecular image of this concept with this "decoration" by biochemical process.

According to the Stephen Ullmann's researches we can mark out that correlation exists between polysemy and frequency of using. Polysemantic words are used more often than monosemantic in the process of communication.

The main teacher`s aim is to use the peculiarities of brain's physiology in the optimization of the foreign language teaching process and as the important method of students' word stock enrichment and as a result developing adequate speaking skills in a foreign language.

1. Introduction

The possibility of using the knowledge about human brain's physiology peculiarities in the process of foreign vocabulary teaching for effectiveness increase is studied in the article.

The aim is to show the variant of solution of the problem on the basis of using polysemy.

Knowledge and results of laws and regularities of human brain's physiology, transformation, encoding, holding and using of information aren't used in the teaching methodology in practice. Psychophysiologists don't concern themselves with problems of teaching methods improving in general. Teachers and methodologists don't take into account peculiarities of brain's physiology and functioning, don't correlate language processes with physiological processes that take place in the brain. Pedagogues use the "frequency" principle mainly (learning by heart of isolated or thematically chosen words, word combinations, sentences and whole texts etc.).

Training effectiveness has direct dependence with quantity and quality of directing information, states and possibilities of students who apprehend and transform directive actions.

2. The physiology of the brain and problems of information formation

Human's brain is the most complicated organization in the known Universe. It consists of 100 billions of neurons and almost 10 000 times more of combinations – 1 quadrillion.

At all times mankind has interest to the question how our brain functions. How do processes of receiving, holding, processing and reproduction of information pass?

It′s possible to divide all perceived information into 2 types:

1. Information reflects direct sensory experience of perception connected with the current changes in the environment. The simple adaptive changes are realized on basis of the experience and its interpretation (such as unconditioned and conditioned reflexes).
2. Information reflects sociocultural experience, principles and rules of information processing formed on the base of it.

Perception and reproduction of *acoustic-graphic codes (AGCs)* are mediated by creation of internal Images that ensure acoustic, visual, articulation and semantic unity of AGC. AGC could be perceived in 3 ways:1) through the acoustic system – the acoustic form; 2) through the visual system – the graphic form; 3) through the visual and the acoustic systems –acoustic-graphic form.

It′s possible to develop the next sequence of events: acoustic information of AGC is processed in the classical acoustic system and in several non-auditory brain formations (subcortical centers). Information comes in primary acoustic cortex (Wernicke's zone). It ensures the understanding of the word meaning. Here information transforms for the voice answering programme formation. Semantic code of the word goes into the Broca′s center. It′s necessary for pronunciation. Both Broca′s center and Wernicke′s zone are connected by arcuate fasciculuse of nerve fibres. The detailed program of articulation (acoustic encording) appears in Broca's center. It`s realised due to the activation of facial zone of motor cortex ruling facial muscles.

If word comes through the visual system (graphic code activation) the primary visual cortex goes on at first. After that the received information is sent to the angular gyrus. It connects the graphic form with its acoustic signal in Wernicke's zone. The subsequent way leading to speech reaction is the same as by acoustic perception.

Conclusion: rather simple lexical task connected with perception, analysis, memorization of AGC demands participation of a whole number of cortical zones, cerebration (brain's work) as a whole.

The importance of information (its novelty) rating creates before the fixation of information in the brain. It's compared with information keeping in the memory.

Coding/encoding of information problems are the key part of the problem of presentation and transformation of information in the human's organism [1]. Several important questions are marked:

1) what specific information is presented by the code, how does it correlate with existing; 2) by what law the information is transformed; 3) how the transformed information passes on; 4) how the interpretation of information is realized; 5) how the information holding is fulfilled; 6) how the actualization of information is realized in certain situation; 7) how differentiation with the other information is accomplished?

The decoding operation means the transformation of one code into the other: “ununderstandable” into “understandable”. We name them “natural” and “alien”:

1) “natural” code is “understandable” for the self-organizing system to what it's addressed (e.g. AGCs of native language for interlocutor). The decoding operation isn't needed. Information could be directly used.
2) “alien” code is “ununderstandable” for the self-organizing system. The decoding operation has to be done for perception and using of information, that is transformation “alien” code (not native language) into “natural”.

The transformation mean of “alien” code into “natural” is initially programmed in the structure of the self-organizing system or created on the base of its experience, in the result of accidental finds or unknown and has to be found by search. The “alien” code is transformed into “natural” after the process of finding and fixation of such transformation method.

4. Problems of information keeping

Concepts “teaching” and “memory” characterize the behaviour of organism in general. They are inseparably linked. They ensure constant replenishment and changing of knowledge as well as learning of new abilities and skills.

Content of “memory” is formed in the result of teaching; successfulness of “teaching” is defined by effectiveness of memory processes such as acquirement of experience, its holding and reproduction.

Not separate information elements but integral systems of knowledge are consolidated in the memory. Such systems give possibilities to gain, to keep and to use the extensive stock of information with the aim of effective adaptation to surrounding world.

Modern ideas about molecular biological mechanism of memory are built on the basis of short-term and long-term forms of information keeping in the human's brain. Transition from the short-term

(easy to destroy memory) to the long-term (stable memory) happens during the first hour after receiving new information. This process was named (memory) *consolidation*. The transition of the short-term memory to the long-term memory needs synthesis of new ribonucleic acid (RNA) molecules and protein (gene expression). It was established that the synthesis wave of new proteins in the cages in the time of information memorizing is coincided with the consolidation period; during this period the chemical blockade of gene expression destroys formation of the long-term memory.

It's easier to memorize and keep information if it's interesting, disputable, unexpected; emotional colored; it's studied during physical activities (walking, standing etc.); in the context (e.g. it's easier to study stars in planetarium); superimposition of new information on the old information: increment of new elements happens.

This is the way of the process of polysemy phenomenon origin.

5. The polysemy of words

Polysemy phenomenon exists in all languages without exception. Words became polysemantic if they designate important phenomenons for the society`s life. As often word is used in the language as probable it's polysemantic.

Polysemantic words are informational objects which have an identical *AGC* in all forms, belong to the same part of speech, have informational crossing in common semantic component; its main informational meaning is completely or partially transferred on all possible informational arrays this word or word combination in definite time of its exist.

The biophysical researches results show that the recognition of polysemantic signs is much more quickly process than non-polysemantic. The second pretender isn't activated in the case of positive correlation. The variant of its deviation and predicational connection are activated. The full search of information scope doesn't happen in the case of its recognition. Appropriate is found by correlation devices between the electro potential wave front (arisen from the input sign) and the electro potential field of memory molecular volume with information (the image of this sign) very quickly. Thereby full molecular “bush” of the information Image recorded earlier by similar (polysemantic) Images is stimulated.

We actuate our brain by one Sign or its part and receive response of Images some quantum and theirs combinations that related to the Image-activator.

6. One of the ways of optimal using of polysemy phenomenon

The necessity of people's communication with different “motherly” informational codes has increased recently. One of the characteristics of a level proficiency in a language is a certain stock of words using. A wide vocabulary indicates the level of person's intellectual development.

Approximate gradation of a vocabulary scope:

1. 400–800 words – basic level of proficiency;
2. under 1500 words – permit to speak and to read initial level literature;
3. under 3000 words – make possible to communicate about everyday necessities, to read nonspecialized literature;
4. 5000 words – ensure reading the printed media and specialized literature;
5. 8000 words – enough for comprehensive communication, reading literature any degree of complexity, watching TV and films.

We should take into account that this quantity is only approximate needed for successful communication on the certain level.

There are 3 methods of education: passive, active, interactive. But they don't have enough references about using physiological laws of brain's function, the mechanism of formation and keeping of information in the human's brain as well.

It's very important to understand how it's possible to convey information with the most coefficients of efficiency in the teaching process. It's necessary to select the special technologies of information holding proper for psychophysiological nature of human's brain.

Any incoming information comes in connection with earlier fixed informational structures in brain. There are a whole lot of memorized informational structures. Meeting with new informational structures happen through joint with the nearest sense structure.

The supplement of new elements to the old elements is easier if it's fixed on the unconscious level in the brain in general or if the initial structure is sequentially reproduced by logic transition from one element to other.

A student learns, transforms and uses information on the base of available knowledge. Succession takes place. Succession is a measure of causal dependence of subject's successor state of development from previous. They are united in the single development process and imparted a property of defined order, direction and stability.

The existence of polysemy is objective language reality. It's caused by unity of:

1) external (in conformity with a person and conditions of society's communicative process);
2) inherent objective and subjective processes in the human's brain;
3) potentiality and structure of language and its components.

Teachers have to use the psychophysiological peculiarity in educational aims for word stock increase.

The polysems with a very ramified system of meanings exist. Sometimes such systems include tens of agreed meanings, for example, *AGCs* “light” – 22 meanings, “board” – 42 meanings, “point” – 45 meanings, “head” – 64 meanings, “line” – 71 meanings etc.

Teacher's task is to show other meanings in the process of acquaintance with the main meaning of AGC. It's the process of gradual “threading” of one meaning to the other meaning. It's necessary to do in such way: meaning 1 is agreed with meaning 2, meaning 2 is agreed with meaning 3 etc. Thereby it's possible to create a system of agreed meanings. The human's brain “memorizes” information in such system easier. Rare used and words of special vocabulary could be expelled.

Let’s memorize 22 words with the agreed meaning – radiant energy or source of it perceived by eye: illumination, daylight, dawn, celestial body, candle, lamp, lantern, projector, fire, traffic light, lighthouse, headlight, opening, star, opinion, publicity, perception, enlightenment, truth, eyesight, glitter, eye. It's difficult.

A human doesn't think by separate AGC. He thinks by Images. Such “bush” of AGC meanings Image is broken up into separate (more often used) meanings. In special situations they are activised in the human's brain.

We've created the molecular “bush” of information for AGC meanings Image “light”. There is the system of agreed meanings from the main “crucial” to “partial”. The “main” meaning is *radiant energy (or source of it).*

Direct meaning. Radiant energy or source of it perceived by an eye that makes the surrounding world visible: Light-1 – radiant energy – Syn. lighting; Light-2 – the natural radiant energy of the day (Syn. daylight); Light-3 – the first appearance of natural radiant energy in the morning (Syn. dawn); Light-5 – a block of wax which is lit to produce radiant energy as it burns (Syn. candle); Light-6 – a device for giving radiant energy (Syn. lantern); Light-9 – a process of combustion or burning (Syn. fire); Light-14- a device for giving radiant energy (Syn. lamp); Light-4 - a fixed luminous point in the night sky (Syn. celestial body); Light-16 – a fixed luminous point for signalling when vehicles have to stop and can go (Syn. traffic light); Light-17 – a fixed luminous point used to guide ships or to warn them of danger (Syn. lighthouse); Light-18 – a fixed luminous point at the front of a motor vehicle or railway engine (Syn. headlight); Light-22 – a luminous point that indicates the state or level of something (Syn. lamp); Light-10 – a luminous point or opening that allows passage or access (Syn. gap).

Figurative meaning. The symbol of internal energy: Light-11 – the state of being well known (Syn. star); Light-19 – a view or judgement formed about something (Syn. opinion); Light-20 – notice or attention given to someone or something by the media (Syn. publicity); Light-21 – the way in which something is regarded, understood, or interpreted (Syn. aspect, view); Light-7 – the action of enlightening or the state of being enlightened (Syn. enlightenment); Light-8 – a true principle or belief, especially one of fundamental importance (Syn. truth); Light-13 – a person’s ability to see (Syn. sight); Light-15 – (of eyes) shine with a particular emotion (Syn. glitter); Light-12 – each of a pair of globular organs of sight in the head of humans and vertebrate animals; the corresponding visual or light-detecting organ of many invertebrate animals (Syn. eye).

Thereby using the AGC “light” in all analyzed meanings is lawful according to laws of formal logic as the substitution of partial by general. The principles of active vocabulary selection are *main* (frequency, necessity, combinative power, semantic value) and *additional* (stylistic unboundedness, word-formative value, principle of counter associations) are fulfilled. Later it’s possible to improve the vocabulary by standard systems to over learn using words.

8. Conclusion

The author gives an account that the proposed method has an experimental character as any other that pretends to methodological problem solution. Using the described method in the author’s teaching profession during 5 years shows the high effectiveness of student’s words stock increase.

References

[1] Mishkin M. Cerebral memory circuits//T.A. Poggio and D.A. Glaser (eds.). Exploring Brain Functions: Models in Neuroscience. John Wiley & Sons Ltd., 113-126, 1993